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Claims

1. A process for providing at least one composite identity marking on a substrate (1) of a security document, wherein said composite identity marking comprises a first identity marking and at least one second identity marking, wherein said first identity marking is provided by a first marking station (5, 5', 5'', 5'''), and wherein said second identity marking is provided by a second marking station, wherein a first side of said substrate (1) is brought into marking relationship with said first marking station (5, 5', 5'', 5'''), characterized in that said second marking station includes a laser marking station (6, 6') for producing a laser beam, in that a portion of the second side of said substrate (1) is provided with a layer of material (60) capable of absorbing a substantial amount of radiation emitted by the laser beam, wherein the laser beam is directed onto said layer of absorbing material (60) through said first side and across said substrate to form said second identity marking only on said second side of the substrate (1).

2. A process as claimed in claim 1, characterized in that the laser beam has a wavelength of between 0.8 μm and 10.6 μm and in that the substrate is a sheet of paper.

3. A process as claimed in claim 1, characterized in that the laser beam has a wavelength of between 0.3 μm and 10.6 μm and in that the substrate is a sheet of polymeric material.

4. A process as claimed in anyone of the preceding claims, characterized in that said layer of absorbing material is a layer of an optically variable device (OVD).

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5. A process as claimed in anyone of claims 1 to 3, characterized in that said layer of absorbing material is an ink layer.

6. A process as claimed in claim 5, characterized in that said ink layer can be deposited by offset, intaglio, silkscreen or flexographic processes.

7. A process according to anyone of claims 1 to 6, characterized in that said first identity marking is achieved by means of a process selected from mechanical typography processes (5, 5', 5''), inkjet processes (5''') and embossing processes.

8. A process according to anyone of claims 1 to 7, characterized in that said first marking is an alphanumerical marking, and in that said first (5, 5', 5'', 5''') and second (6, 6') marking stations are controlled by a common processing unit (8) associating said second identity marking to said first alphanumerical identity marking by a mathematical or logical linking rule.

9. A process according to claim 8, characterized in that a plurality of sequentially distributed composite identity markings comprising first and second identity markings are provided on said substrate (1) and in that said processing unit issues sequentially ordered controlled signals to said first and second marking stations, such that each of said stations achieves, on each side of the substrate (1), sequentially determined markings able to form with corresponding markings achieved on the other side of the substrate (1) a composite identity marking, wherein said second identity marking and said first identity marking of each composite identity marking correspond together by virtue of said linking rule.

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10. A process according to claim 8 or 9, characterized in that each said second identity marking is univocally determined by means of said linking rule, said linking rule being an algorithmic rule or a sequence of data stored in an authenticating database.

11. A process as claimed in anyone of the preceding claims, characterized in that said second identity marking corresponds to said first identity marking by rules of symmetry, such that the information provided by the second marking appears identical, when the substrate (1) is viewed from the second side, to the information provided by first marking when the substrate (1) is viewed from the first side.

12. A process according to anyone of the preceding claims, wherein said substrate (1) includes a set of security documents which are assembled in form of a sheet where individual security documents occupy adjacent fields distributed in rows and columns (11, 12, 13), characterized in that a composite identity marking is provided on each of a plurality of said individual security documents.

13. A process according to any of the preceding claims, characterized in that after achievement of each complete composite identity marking on said substrate, the latter is led to a checking device (9, 9', 9'') verifying the achievement of the identity markings.

14. A process according to any of claims 12 to 13, characterized in that a plurality of sheets bearing sets of security documents are processed and in that said sheets, after complete identity marking, are cut in rows and columns, and are processed to form sequential series of isolated security documents.

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15. A process according to anyone of the preceding claims, characterized in that said first and second identity markings are provided on said substrate (1) while the substrate (1) is borne on a same processing drum or cylinder (3).

16. An apparatus for providing at least one composite identity marking on a substrate (1) of a security document, wherein said composite identity marking comprises a first identity marking on a first side of said substrate (1) and at least one second identity marking on a second side of said substrate (1), said apparatus comprising a first marking station (5, 5', 5'', 5''') and at least a second marking station, wherein said apparatus has means (3) for bringing a first side of said substrate (1) into marking relationship with said first marking station (5, 5', 5'', 5''') and in front of said second marking station, characterized in that said second marking station is a laser marking station (6, 6') for producing a laser beam and in that the laser radiation of said laser beam is selected among the radiations capable to pass through the substrate (1) without substantial modification thereof, and capable to react with a predetermined portion of material (60) which absorbs a substantial amount of radiation emitted by the laser beam and which is arranged on said second side of said substrate (1), said second marking station being arranged in such a manner that said laser beam is directed onto said absorbing material (60) through said first side and across said substrate to form said second identity marking only on said second side of the substrate (1).

17. An apparatus according to claim 16, characterized in that said first identity marking is an alphanumerical marking and in that first and second marking stations are controlled

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by a common processing unit (8) associating said second identity marking to said first alphanumerical identity marking by a mathematical or logical linking rule.

18. An apparatus according to claim 17, for providing a plurality of sequentially distributed composite identity markings on said substrate (1), characterized in that said processing unit (8) issues sequentially ordered controlled signals to said first and second marking stations, such that each of said stations achieves, on each side of said substrate (1), sequentially determined markings able to form with corresponding markings achieved on the other side of the substrate (1) a composite identity marking, wherein said second identity marking and said first identity marking of each composite identity marking correspond together by virtue of said linking rule.

19. An apparatus according to anyone of claims 16 to 18, for processing substrates each including a set of security documents assembled in form of a sheet where the individual security documents occupy adjacent fields (111-1310) distributed in rows and columns (11, 12, 13), characterized in that each marking station (5, 6) comprises a plurality of component marking devices (51, 52, 53; 61, 62, 63), wherein the operating zone of each marking device corresponds to one column, and in that the processing unit (8) is programmed so that control signals are distributed to the different component marking devices, the signals received by each component marking device being sequentially elaborated by the processing unit in function of the location of the component marking device.

20. An apparatus according to any of claims 16 to 19, characterized in that it further comprises a checking device

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(9, 9', 9'') verifying the achievement of the composite identity marking.

21. An apparatus according to anyone of claims 16 to 20, characterized in that said means for bringing the substrate (1) into marking relationship with said first (5, 5', 5'', 5''') and second (6, 6') marking stations is a processing drum or cylinder (3).